

Appl. No. 10/732,935

Amdt. Dated November 1, 2005

Reply to Office Action of September 1, 2005

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the above-identified application:

Claim 1 (Currently Amended) An air turbine starter, comprising:

a starter housing adapted to couple to a gearbox assembly, the starter housing including an opening configured to provide fluid communication between the gearbox assembly and the starter housing; and

a check valve assembly disposed within the opening, the check valve assembly comprising:

a valve body having an inlet port, an outlet port, and a flow passage therebetween, the valve body comprising a backing plate and a cage, the backing plate including an annular flange extending therefrom, and the cage having at least a portion extending across the flow passage and an annular groove formed therein;

a valve seat coupled to the valve body and disposed between the backing plate and the cage, the valve seat extending at least partially into the flow passage and having an outer annular protrusion formed thereon, an opening therethrough, and an inner periphery, the outer annular protrusion disposed within the cage annular groove, and the inner periphery disposed under the plate annular flange; and

a valve element disposed within the flow passage between the valve seat and the valve body outlet port, the valve element configured to translate axially between an open position and a closed position in response to a pressure differential between the inlet and outlet ports.

Claim 2 (Cancelled).

Claim 3 (Currently Amended) The air turbine starter of claim ~~[[2]]~~1, wherein the valve element includes a protrusion extending from a surface thereof and configured to selectively contact the at least one portion of the cage.

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Claim 4 (Currently Amended) The air turbine starter of claim ~~[[2]]~~1, wherein the at least one portion of the cage includes a protrusion extending from a surface thereof and configured to selectively contact the valve element.

Claim 5 (Currently Amended) The air turbine starter of claim 1, wherein the elastomeric valve seat ~~further includes an annular protrusion~~ is disposed at least partially within the flow passage, ~~wherein the annular protrusion and~~ sealingly couples to the valve element when the valve element is in the closed position.

Claim 6 (Original) The air turbine starter of claim 1, wherein the valve seat is elastomeric.

Claim 7 (Original) The air turbine starter of claim 1, wherein the valve seat is smoothly ground.

Claim 8 (Original) The air turbine starter of claim 1, wherein the valve element is made of a low density material.

Claim 9 (Currently Amended) A check valve assembly, comprising:  
a valve body having an inlet port, an outlet port, and a flow passage therebetween,  
the valve body comprising a backing plate and a cage, the backing plate including an annular flange extending therefrom, and the cage having at least a portion extending across the flow passage and an annular groove formed therein;

a valve seat coupled to the valve body and disposed between the backing plate and the cage, the valve seat extending at least partially into the flow passage and having an outer annular protrusion formed thereon, an opening therethrough, and an inner periphery, the outer annular protrusion disposed within the cage annular groove, and the inner periphery disposed under the plate annular flange; and

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a valve element disposed within the flow passage between the valve seat and the valve body outlet port, the valve element configured to translate axially between an open position and a closed position in response to a pressure differential between the inlet and outlet ports.

Claim 10 (Cancelled).

Claim 11 (Currently Amended) The check valve assembly of claim [[10]]9, wherein the valve element includes a protrusion configured to selectively contact the at least one portion of the cage.

Claim 12 (Currently Amended) The check valve assembly of claim [[10]]9, wherein the at least one portion of the cage includes a protrusion configured to selectively contact the valve element.

Claim 13 (Currently Amended) The check valve assembly of claim 9, wherein the valve seat ~~further includes an annular protrusion~~ is disposed at least partially within the flow passage, wherein the annular protrusion and sealingly couples to the valve element when the valve element is in the closed position.

Claim 14 (Original) The check valve assembly of claim 9, wherein the valve seat is elastomeric.

Claim 15 (Original) The check valve assembly of claim 9, wherein the valve seat is smoothly ground.

Claim 16 (Original) The check valve assembly of claim 9, wherein the valve element is made of a low density material.

Claim 17 (Currently Amended) A check valve assembly, comprising:

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a backing plate having an outlet port and an annular flange extending therefrom;

a cage coupled to the backing plate, the cage having an inlet port, wherein a flow passage extends between the inlet port and the outlet port and an annular groove formed therein;

a valve seat coupled ~~[[to]]~~ between the backing plate and the cage, the valve seat extending at least partially into the flow passage and having an outer annular protrusion formed thereon, an opening therethrough, and an inner periphery, the outer annular protrusion disposed within the cage annular groove, and the inner periphery disposed under the plate annular flange; and

a valve element disposed within the flow passage between the valve seat and the inlet port, the valve element configured to translate axially between an open position and a closed position in response to a pressure differential between the inlet and outlet ports.

Claim 18 (Original) The check valve assembly of claim 17, wherein the valve element includes a protrusion configured to selectively contact the at least one portion of the cage.

Claim 19 (Original) The check valve assembly of claim 17, wherein the at least one portion of the cage includes a protrusion configured to selectively contact the valve element.

Claim 20 (Currently Amended) The check valve assembly of claim 17, wherein the valve seat ~~further includes an annular protrusion~~ is disposed at least partially within the flow passage, wherein the annular protrusion and sealingly couples to the valve element when the valve element is in the closed position.

Claim 21 (Original) The check valve assembly of claim 17, wherein the valve seat is elastomeric.

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Claim 22 (Original) The check valve assembly of claim 17, wherein the valve seat is smoothly ground.

Claim 23 (Original) The check valve assembly of claim 17, wherein the valve element is made of a low density material.